DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Any rejection of record in the previous action not addressed in this office action is withdrawn.

Drawings

The drawings were received on 3/16/09. These drawings are still objected to since there is text in a foreign language present, in addition to large portions of the sequences therein which are apparently blacked out. It is not clear whether these sections are intended to be shaded or blacked out.

The following is a new rejection:

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1, 2, 4- 8, 14, 24, 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Mayer (WO 02/087554) (cited on IDS of 7/19/06).

May discloses the use of substances binding to the bacterial translation factor EF-TU, to prevent the formation of a cytoskeleton in bacterial cells, which comprises using agents comprising partial sections of the amino acid sequences of the domain 2 and/or 3 of a bacterial EF-TU protein, preferably with a length of between 4-20 (see abstract). The product would bind to bacterial EF-TU in the area of the domain 2 and/or domain 3 of said EF-Tu.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 2, 4-8, 14, 24, 25 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

This rejection is maintained essentially for the reasons set forth in the previous Office action, mailed 9/16/08, with modifications necessitated by applicant's amendments.

The MPEP states that the purpose of the written description requirement is to ensure that the inventor had possession, as of the filing date of the application, of the specific subject matter later claimed by him. The courts have stated:

> To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997); *In re Gostelli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) ("[T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood*, 107 F.3d at 1572, 41 USPQ2d at 1966." *Regents of the University of California v. Eli Lilly & Co.*, 43 USPQ2d 1398.

Further, for a broad generic claim, the specification must provide adequate written description to identify the genus of the claim. In *Regents of the University of California v. Eli Lilly & Co.* the court stated:

> A written description of an invention involving a chemical genus, like a description of a chemical species, "requires a precise definition, such as by structure, formula, [or] chemical name," of the claimed subject matter sufficient to distinguish it from other materials. *Fiers*, 984 F.2d at 1171, 25 USPQ2d 1601; *In re Smythe*, 480 F.2d 1376, 1383, 178 USPQ 279, 284985 (CCPA 1973) ("In other cases, particularly but not necessarily, chemical cases, where there is unpredictability in performance of certain species or subcombinations other than those specifically enumerated, one skilled in the art may be found not to have been placed in possession of a

genus ...") *Regents of the University of California v. Eli Lilly & Co.*, 43 USPQ2d 1398.

The MPEP further states that if a biomolecule is described only by a functional characteristic, without any disclosed correlation between function and structure of the sequence, it is "not a sufficient characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence." MPEP § 2163. The MPEP does state that for a generic claim the genus can be adequately described if the disclosure presents a sufficient number of representative species that encompass the genus. MPEP § 2163. If the genus has a substantial variance, the disclosure must describe a sufficient variety of species to reflect the variation within that genus. See MPEP § 2163. Although the MPEP does not define what constitute a sufficient number of representative species, the courts have indicated what do not constitute a representative number of species to adequately describe a broad generic. In *Gostelli*, the courts determined that the disclosure of two chemical compounds within a subgenus did not describe that subgenus. *In re Gostelli*, 872, F.2d at 1012, 10 USPQ2d at 1618.

The MPEP lists factors that can be used to determine if sufficient evidence of possession has been furnished in the disclosure of the Application. These include: (1) Actual reduction to practice, (2) Disclosure of drawings or structural chemical formulas, (3) Sufficient relevant identifying characteristics (such as: i. Complete structure, ii. Partial structure, iii. Physical and/or chemical properties, iv. Functional characteristics when coupled with a known or disclosed, and

correlation between function and structure), (4) Method of making the claimed invention, (5) Level of skill and knowledge in the art, and (6) Predictability in the art.

"Disclosure of any combination of such identifying characteristics that distinguish the claimed invention from other materials and would lead one of skill in the art to the conclusion that the applicant was in possession of the claimed species is sufficient." MPEP § 2163. While all of the factors have been considered, a sufficient amount for a *prima facie* case are discussed below.

In the instant case, the claims are drawn to a genus of methods for bacterial cell digestion comprising employing any substance that binds to bacterial EF-Tu in particular regions, or any linear or cyclic peptide compound or peptide mimetic agent that binds to bacterial EF-Tu in particular regions, or a substance comprising domain 3 of EF-Tu plus any other compound (claim 7). (It is noted that claim 5, and claims dependent thereon, is given its broadest reasonable interpretation, which would include any peptide or polypeptide having at least one ("partial segment") amino acid that is found in domain 2 or 3 of EF-Tu, plus any other amino acids within the constraint of the length recitation.)

As stated *supra*, the MPEP states that written description for a genus can be achieved by a representative number of species within a broad generic. It is unquestionable that these claim(s) are broad and generic, with respect to all possible compounds encompassed by the claims. The possible structural variations are numerous, since there is no limitation as to the structure, or only general limitation (claim 8) . Specifically, the claims lack written description

because it is clear that experimentation would be required to determine whether any possible compound in the universe of substances, or the genus of linear or cyclic peptides or peptide mimetic agents, would meet the functional activity of bacterial cell digestion. Further, it is noted that the term "employing" the substance, does not exclude the method in which the "substance" is utilized with any other compound, and with any method of treatment. Therefore, one of ordinary skill in the art would not be able to determine which of the species of substances would have bacterial digestion activity through binding to bacterial EF-Tu, without experimentation and thus the structure-function correlation is considered to be unpredictable. Although the claims recite some functional characteristics, the claims lack written description because there is no disclosure of a *correlation* between function and structure of the compounds encompassed (any substance, any peptide which is linear or cyclic peptide, or any peptide mimetic agent) beyond those compounds specifically disclosed in the examples in the specification. Moreover, the specification lack sufficient variety of species to reflect this variance in the genus. While having written description of several specific peptide fragments of the specific substance which is bacterial EF-Tu, the specification does not provide sufficient descriptive support for the myriad of compounds embraced by the claims such that one of ordinary skill in the art would be able to envision the next species of the genus of substances . The description requirement of the patent statue requires a description of an invention, not an indication of a result that one might achieve if one made that invention. See *In re Wilder*, 736, F.2d 1516, 1521, 222 USPQ 369, 372-73 (Fed.

Cir. 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate.") Accordingly, it is deemed that the specification fails to provide adequate written description for the genus of the claims and does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession *of the entire scope* of the claimed invention.

Claims 1, 2, 4- 8, 14, 24, 25 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for method of bacterial cell digestion comprising using certain disclosed fragments of EF-Tu, does not reasonably provide enablement for other methods using other substances that bind to bacterial EF-Tu in the area of domain 2 and/or 3 and which digest bacterial cells. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The factors considered when determining if the disclosure satisfies the enablement requirement and whether any necessary experimentation is undue include, but are not limited to: 1) nature of the invention, 2) state of the prior art, 3) relative skill of those in the art, 4) level of predictability in the art, 5) existence of working examples, 6) breadth of claims, 7) amount of direction or guidance by the inventor, and 8) quantity of experimentation needed to make or use the

invention. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

1. .Breadth of the claims.

In regards to the method of the invention and the breadth of the claims the broadest interpretation that applies is a method of administering any agent, with or without the limitations of length (claims 5, 6, 24, 25), general structure (claim 8), or limited sequence (claims 5, 8, 24, 25), that binds EF-Tu and is involved with digestion of a bacterial cell.

2. The nature of the invention.

The invention is drawn to a method of administering any agent , or any agent with the limited structural limitations set forth above in 1., that binds EF-Tu and causes bacterial cell digestion.

3. The state of prior art.

In regards to the use of substances which bind EF-Tu, the prior art discloses various compounds such as anti-biotic elfamycin secreted by actinomycetes, which comprise a number of related compounds that limit the activity of EF-Tu by binding the EF-tu factor irreversibly to the ribosome. Benica et al. describe the cross-reactivity of monoclonal antibodies with elongation factor of type EF-Tu of various mycoplasma species and Kamla et al. describe the preparation of monoclonal antibodies against EF-Tu .factor of mycoplasmas. However, the prior art does not discuss substances, which bind EF-Tu that cause cell digestion.

4. The relative skill in the art.

That of a M.D. or Ph.D. level individual, as it relates to the method of the invention characterizes the relative skill in the art.

5. The level of predictability in the art.

Since there is not much known about the inhibition of cytoskeleton formation, with cell digestion, in a bacterial cell via administering an agent which binds EF-Tu the level of predictability in the art is low.

6. The amount of guidance present.

The amount of guidance provided by the applicants in the present application is extremely low because the applicants have provided only limited guidance regarding agents which consist of peptides that are portions of the bacterial EF-Tu, but have not provided any structural information regarding other types of substance which would have the claimed effect and function in the claimed method

7. The existence of working examples.

The specification has provided one limited example stating that cell dissolution occurs when the domain 3 (only) of EF-Tu is expressed (page 10).

8. The quantity of experimentation necessary.

In the case of the use substances which bind EF-Tu and that participate or cause cell dissolution in a bacterial cell more experimentation would be required to

practice the invention since the specification has not shown to a person skill in the art how to make and use substances other than peptides which consist of a sequential portion of domain 2 or 3 of EF-Tu which bind EF-Tu and cause dissolution. Due to the large quantity of experimentation necessary to identify substances which bind to EF-Tu and cause cell digestion, other than those actually disclosed, the lack of guidance presented in the specification regarding the same, the absence of a working example directed to same, the unpredictable nature of the invention with regards to cytoskeleton formation and cell dissolution in a bacterial cell using agents that bind EF-Tu, the state of the prior art not providing any evidence for substances which bind EF-Tu that inhibit the formation of a cytoskeleton in a bacterial cell and cause dissolution, and the breath of the claims the specification fails to teach the skilled artisan in the art how to make and use the invention in the full scope of the claims.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 5-8, 14, 24, 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 and by dependence claims 2, 5-8, 14, 24, 25 are vague and indefinite in the recitation of "employing a substance" since it is not clear in what sense the substance is "employed". While the claims provide for employment of substances which bind to EF-Tu to inhibit the formation of a cytoskeleton in

bacterial cells, but since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a method without any active, positive steps delimiting how this method is actually practiced.

Claim 5, 6, 24, 25 are vague and indefinite in the recitation of "the substance comprises a partial segment of the amino acid sequence from domain 2 or domain 3 of said EF-Tu having a length of at least four amino acids [or other lengths in 6, 24, 25]". It is not clear what is intended by this phrase. For example, the claim could be interpreted to mean any substance that has at least one amino acid from domain 2 or domain 3 of EF-Tu,, plus any three amino acids of any identity, plus any other amino acids. Therefore, the substance could include virtually any peptide or polypeptide of any sequence, as long as it is greater than 4 amino acids long and has one amino acid from domain 2 or 3 of EF-Tu. Alternatively, the claim could intend that the segment of amino acid sequence from domain 2 or domain 3 of EF-Tu must be 4 amino acids, of consecutive sequence therefrom. Alternatively, the claim could intend that the 4 amino acids from EF-Tu need not be a consecutive sequence. Therefore, the intended metes and bound are not clear.

Claims 4 is vague and indefinite in the recitation of particular amino acid numbers in particular domains of EF-Tu, since it is not expected that the numbering of amino acids would be identical in EF-Tu molecules from all encompassed organism. Therefore it is not clear what molecules are intended.

Claim 14 recites the limitation "said substance which destabilizes the cytoskeleton" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim or in the claim on which it depends.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY VOGEL whose telephone number is (571)272-0780. The examiner can normally be reached on 7:00 - 3:30, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Low can be reached on (571) 272-0951. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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